



Delivering More Than Power®

Navajo Generating Station
PO Box 850
Page, AZ 86040

Mail Station NGS010
Phone: (928) 645-6217
Fax: (928) 645-7298

October 1, 2015

Dr. Donald Benn, Executive Director
Navajo Nation Environmental Protection Agency
P.O. Box 339
Window Rock, AZ 86515

Subject: Particulate Matter (PM) Performance Testing Notification for Navajo Generating Station Units 1, 2, & 3

Dear Dr. Benn:

In accordance with 40 CFR §63.10030(d) and 40 CFR §63.7(b) *National Emission Standards for Hazardous Air Pollutants (NESHAP): Coal- and Oil-Fired Electric Utility Steam Generating Unit* (40 CFR Part 63, Subpart UUUUU), this letter provides written notification for performance testing of Units 1, 2 and 3 at the Navajo Generating Station. Testing is scheduled to begin on December 7, 2015. Method 2 will be used for flow, Method 3A will be used for carbon dioxide concentration, Method 4 will be used for moisture if saturated stack conditions are not demonstrated and Method 5 (modified according to the requirements of Subpart UUUUU) will be used for particulate matter (PM) concentrations.

Catalyst Air Management will be conducting the testing.

Please call me at (602) 236-5256 if you have any further questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert Talbot", is written over a horizontal line.

Robert Talbot, Manager
Navajo Generating Station

cc: U.S. EPA, Enforcement Office Chief, Air Division
U.S. EPA Region 9

U.S. Environmental Protection Agency
October 1, 2015
Page 2

bcc: P. Ostapuk
R. Talbot
W. Begay
K. Watt
File: B. Sprungl/EMIS/LOC-6-15-2

NAVAJO GENERATING STATION

P.O. Box 850
Page, AZ 86040
(928) 645-6217
Fax (928) 645-7298

ROBERT K. TALBOT
Manager

July 29, 2015

CERTIFIED MAIL

Director, Navajo Environmental Protection Agency
P.O. Box 339
Window Rock, AZ 86515

Director, Air Division
U.S. Environmental Protection Agency, Region IX
Mail Code: AIR-5
75 Hawthorne Street
San Francisco, CA 94105

**Re: Navajo Generating Station
Semiannual Monitoring Report
Permit No. NN-ROP-05-06**

Dear Director's:

As required by 40 CFR § 71.6(a)(3)(iii)(A), and Conditions III.C.1 of the above referenced permit, please find enclosed the Semiannual Monitoring Report (Attachments 1, 2 and 3) for Navajo Generating Station. Also enclosed is the required Certification of Truth, Accuracy, and Completeness (Attachment 4).

Please feel free to contact me at (928) 645-6217 if you have any questions.

Sincerely,



Robert K. Talbot
Manager

cc: Barbara Sprungl, SRP

Attachment 1. Semiannual Monitoring Report



OMB No. 2060-0336, Approval Expires 04/30/2012

Federal Operating Permit Program (40 CFR Part 71)

6-MONTH MONITORING REPORT (SIXMON)

Section A (General Information)

Permit No. NN-ROP-05-06

Reporting Period: Beg. 01 / 01 / 2015 End. 06 / 30 / 2015

Source / Company Name SRP Navajo Generating Station

Mailing Address: Street or P.O. Box P.O. Box 850

City Page State AZ ZIP 86040 -

Contact person Robert K. Talbot Title Plant Manager

Telephone (928) 645 - 6217 Ext.

Continued on next page

Section B (Monitoring Report)

Summarize all required monitoring, data, or analyses required by the permit for the reporting period. Describe and cross-reference the permit term and list the emission units (Unit IDs) where the monitoring was performed. Indicate whether a separate monitoring report is required, and if required, enter the date submitted. If submitted for the first time as an attachment to this form, assign an attachment ID, mark the attachment with that ID, and attach the report to this form.

Monitoring, Data, or Analysis Required by the Permit	Emission Units (Unit IDs)	Separate Monitoring Report?	Date of Separate Report Submittal or Attachment ID
<p>Continuous emission monitoring for NO_x (Condition 2 and Attachment A, Acid Rain Permit NN-07-01). Each unit is subject to an annual average NO_x limit of 0.40 lb/MMBtu pursuant to 40 CFR 76.8(d)(2) (NO_x early election compliance plan).</p> <p>Reports demonstrating compliance with this requirement were submitted to EPA on the dates indicated.</p>	U1, U2, U3	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Acid Rain EDRs to EPA</p> <p><u>04 / 29 / 2015</u> <u>07 / 29 / 2015</u></p>
<p>Continuous emission monitoring for SO₂ (Condition 1 and Attachment A, Acid Rain Permit NN-07-01). Each unit is subject to an annual SO₂ Acid Rain (Phase II) allowance allocation.</p> <p>Reports demonstrating compliance with this requirement were submitted to EPA on the dates indicated.</p>	U1, U2, U3	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Acid Rain EDRs to EPA</p> <p><u>04 / 29 / 2015</u> <u>07 / 29 / 2015</u></p>
<p>Continuous emission monitoring for SO₂ (Conditions II.B.3, II.B.4, and II.B.5). The facility is subject to a plantwide rolling 365 boiler operating day average emission limit of 0.10 lb/MMBtu pursuant to Condition II.B.2 and 40 CFR 52.145(d)(2) (Visibility).</p> <p>Reports demonstrating compliance with this requirement were submitted to EPA on the dates indicated.</p>	U1, U2, U3	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Excess Emission Reports to EPA Region IX</p> <p><u>04 / 29 / 2015</u> <u>07 / 29 / 2015</u></p>
<p>Weekly visible emission survey, with follow up Method 9 within 24 hours if visible emissions are observed (Condition II.C.5, II.D.1, II.D.2, II.E.2, and II.E.3). Stack emissions from transfer point ≤ 7% opacity, and fugitive emissions ≤ 10% opacity, pursuant to NSPS Subpart OOO.</p> <p>Records demonstrating compliance with this condition are included in Attachment 3 of this report.</p>	DC9, DC10, DC11	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<p>Once per 5-year permit term and at other times specified by the EPA, conduct PM performance tests for exhaust from DC9, DC10, and DC11 using EPA Method 5 or 17. Conduct a performance test within 120 days if visible emissions are observed 3 times from any one baghouse during a consecutive 12-month period (Condition II.E.1).</p> <p>The required performance test was conducted as required during the current permit term (i.e., prior to 7/3/2013). A report demonstrating compliance with this requirement was submitted to EPA on the date indicated. Visible emissions were observed more than three times during the year 2011 on DC11 which resulted in performance testing being conducted November 7, 2011 and the report demonstrating compliance with the emissions limit being submitted January 9, 2012.</p>	DC9, DC10, DC11	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p><u>10 / 20 / 2009</u></p> <p>Attachment ID _____</p>
<p>Within 60 days of installation of the low-NO_x burners, install, and thereafter operate, maintain, certify, and quality assure CEMS for CO (PSD Permit AZ 08-01A Condition IX.E.1). Submit CO CEMS performance test protocol 30 days prior to test date, and results of performance test within 60 days of completion (Condition II.B.5 and II.B.6 of Permit Reopening).</p> <p>Performance tests were conducted on the low-NO_x burners on Unit 3 in 2009, Unit 2 in 2010, and Unit 1 in 2011.</p>	U1, U2, U3	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p><u>6 / 28 / 2011</u></p> <p>Attachment ID _____</p>

Section B (Monitoring Report)

Summarize all required monitoring, data, or analyses required by the permit for the reporting period. Describe and cross-reference the permit term and list the emission units (Unit IDs) where the monitoring was performed. Indicate whether a separate monitoring report is required, and if required, enter the date submitted. If submitted for the first time as an attachment to this form, assign an attachment ID, mark the attachment with that ID, and attach the report to this form.

Monitoring, Data, or Analysis Required by the Permit	Emission Units (Unit IDs)	Separate Monitoring Report?	Date of Separate Report Submittal or Attachment ID
<p>Following initial startup of low-NO_x burners, NO_x ≤ 0.24 lb/MMBtu (PSD Permit AZ 08-01A Condition IX.B.2), CO ≤ 0.23 lb/MMBtu on a 30-day rolling average basis (PSD Permit AZ 08-01A Condition IX.B.1.a) and CO ≤ 0.15 lb/MMBtu on a 12-Month rolling average basis (PSD Permit AZ 08-01A Condition IX.B.1.b). Submit excess emission reports semiannually 30 days after the end of each calendar quarter (PSD Permit AZ 08-01A Condition IX.G.5).</p> <p>Reports demonstrating compliance with this requirement were submitted to EPA on the date indicated.</p>	U1, U2, U3	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Excess Emission Report to EPA Region IX</p> <p><u>04 / 29 / 2015</u></p> <p><u>07 / 29 / 2015</u></p>
<p>Conduct a thirty day initial performance test for NO_x and CO with the CEMS starting the day after successful completion of the performance testing for the CO CEMS. Submit report within 30 days of completion (PSD Permit AZ 08-01A Condition IX.F).</p> <p>Performance test results were submitted for Unit 3 in 2009, Unit 2 in 2010 and Unit 1 in 2011.</p>	U1, U2, U3	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p><u>6 / 28 / 2011</u></p> <p>Attachment ID _____</p>
<p>After the 18 month Demonstration Period for each LNB/SOFA system, the Permittee shall submit to EPA a written report together with CO CEMS data showing actual CO emissions which evaluates whether a lower CO emissions limit can be consistently and reasonably achieved while maintaining NO_x emission levels at or below 0.24 lb/MMBtu on a 30-day rolling average (PSD Permit AZ 08-01A Condition IX.C.2).</p> <p>A report meeting this requirement was submitted to EPA on 11/15/2010 for Unit 3, on 1/20/2012 for Unit 2 and 1/08/2013 for Unit 1.</p>	U1, U2, U3	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p><u>1 / 08 / 2013</u></p> <p>Attachment ID _____</p>
<p>SO₂ ≤ 1.0 lb/MMBtu from Units 1, 2, and 3, averaged over any 3-hour period, on a plantwide basis (Condition II.A.2 of Permit Reopening). Maintain and operate CEMS for SO₂ on Units 1, 2 and 3 in accordance with 40 CFR 60.8 and 60.13(e), (f), and (h), and Appendix B of Part 60. Comply with the quality assurance procedures for CEMS found in (Condition II.A.3 of Permit Reopening).</p> <p>Reports demonstrating compliance with this requirement were submitted to EPA on the dates indicated.</p>	U1, U2, U3	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Excess Emission Report to EPA Region IX</p> <p><u>04 / 29 / 2015</u></p> <p><u>07 / 29 / 2015</u></p>
<p>PM ≤ 0.060 lb/MMBtu, on a plantwide basis, as determined by annual mass emissions tests conducted on Units 1, 2, and 3, operating at rated capacity, using coal that is representative of that normally used (Condition II.A.2.b of Permit Reopening).</p> <p>A report demonstrating compliance with this requirement was submitted to EPA on the date indicated.</p>	U1, U2, U3	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p><u>07 / 27 / 2015</u></p> <p>Attachment ID _____</p>
<p>Opacity from the stacks of Units 1, 2, or 3 ≤ 20%, excluding condensed uncombined water droplets, averaged over any six (6) minute period. Opacity from the stacks of Units 1, 2 or 3 ≤ 40% opacity, averaged over six (6) minutes, during absorber upset transition periods. Maintain and operate COMS on Units 1, 2, and 3 in accordance with CFR 60.8 and 60.13(e), (f), and (h), and Appendix B of Part 60, and comply with the quality assurance procedures in 40 CFR Part 75 (Condition II.A.2.a of Permit Reopening). (NGS FIP – 40CFR §49.24(d)(4) and §49.24(e)(1)).</p> <p>Reports demonstrating compliance with this requirement were submitted to the EPA on the dates indicated.</p>	U1, U2, U3	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Excess Emission Report to EPA Region IX</p> <p><u>04 / 29 / 2015</u></p> <p><u>07 / 29 / 2015</u></p>

Section B (Monitoring Report)

Summarize all required monitoring, data, or analyses required by the permit for the reporting period. Describe and cross-reference the permit term and list the emission units (Unit IDs) where the monitoring was performed. Indicate whether a separate monitoring report is required, and if required, enter the date submitted. If submitted for the first time as an attachment to this form, assign an attachment ID, mark the attachment with that ID, and attach the report to this form.

Monitoring, Data, or Analysis Required by the Permit	Emission Units (Unit IDs)	Separate Monitoring Report?	Date of Separate Report Submittal or Attachment ID
<p>Operate and maintain the existing dust suppression methods for controlling dust from the coal handling and storage facilities. Submit a description of the dust suppression methods for controlling dust from the coal handling and storage facilities, fly ash handling and storage, and road sweeping activities. Opacity < 20% from any crusher, grinding mill, screening operation, belt conveyer, truck loading and unloading operation, or railcar unloading station, as determined using 40 CFR Part 60, Appendix A-4, Method 9 (Condition II.A.2.c of Permit Reopening).</p> <p>Records demonstrating compliance with these requirements are maintained on site.</p>	Fugitive Dust	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<u>6 / 04 / 2010</u> Attachment ID _____
<p>During any calendar year in which an auxiliary boiler is operated for 720 hours or more, and at other times as requested by the Administrator, conduct mass emissions tests for SO₂, NO_x and /or PM on the auxiliary steam boilers, operating at rated capacity, using oil that is representative of that normally used. (Condition II.A.3.c of Permit Reopening).</p> <p>The auxiliary boiler was not operated for more than 720 hours this year, and no testing has been requested. Therefore, no testing was required during this reporting period.</p>	Aux Boiler	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<u> / / </u> Attachment ID _____
<p>Maintain and operate ambient monitors at Glen Canyon Dam for PM_{2.5}, PM₁₀, NO_x, SO₂ and ozone. Report data annually to the Regional Administrator (Condition II.A.3.f of Permit Reopening).</p> <p>The required annual report demonstrating compliance with this requirement is submitted annually within the 60 days after year end. On June 22, 2015, an error was identified in the manner in which SRP had calculated compliance with the 8-hour ozone National Ambient Air Quality Standard (NAAQS) for the periods of 2010-2012, 2011-2013, and 2012-2014. On July 8, 2015 SRP submitted a letter to EPA Region 9 and NNEPA providing details on the compliance calculation error and the impacts on the 8-hour ozone concentrations</p>	Ambient Monitors	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<u>2 / 25 / 2015</u> Attachment ID _____
<p>Monitor, log and record parameters according to the requirements in the CAM plan. Excursions or exceedances shall be reported and Quality Improvement Plan (QIP) shall be implemented if excursions occur (Condition II.C. of Permit Reopening).</p> <p>Records demonstrating compliance with these requirements are maintained on site.</p>	U1, U2, U3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<u> / / </u> Attachment ID <u>3</u>

Section C (Deviations Already "Promptly" Reported)

Summarize all deviations from permit terms already reported on form **PDR** during the reporting period. Copy this page as many times as necessary to include all such deviations. Describe and cross-reference the permit terms and report the start and end dates and times of the deviations (mo/day/yr, hr:min). Use the 24-hour clock. Also specify the date when the written deviation report was submitted to the permitting authority (If written report required, but not submitted, leave the date field blank). Note that failure to submit a deviation report, or late submittal, is a deviation that must be reported in the Section D.

Permit Term for Which There was a Deviation: No deviations to report

Emission Units (unit IDs):

Deviation Start ____/____/____ ____:____ End: ____/____/____ ____:____

Date Written Report Submitted ____/____/____

Permit Term for Which There was a Deviation:

Emission Units (unit IDs):

Deviation Start ____/____/____ ____:____ End: ____/____/____ ____:____

Date Written Report Submitted ____/____/____

Permit Term for Which There was a Deviation:

Emission Units (unit IDs):

Deviation Start ____/____/____ ____:____ End: ____/____/____ ____:____

Date Written Report Submitted ____/____/____

Permit Term for Which There was a Deviation:

Emission Units (unit IDs):

Deviation Start ____/____/____ ____:____ End: ____/____/____ ____:____

Date Written Report Submitted ____/____/____

Section D (Deviations Reported Semiannually)

This section is for deviations reported for the first time in this six-month monitoring report. Describe and cross-reference the permit terms and emission units that apply to the deviation. Copy this page as many times as necessary to include all such deviations. Report the beginning and ending times (mo/day/yr, hr:min) for each deviation. Use the 24-hour clock. Briefly explain (if known) the probable cause of each deviation. If any corrective actions or preventative measures have been taken to avoid these in the future, briefly describe the measures, including when they occurred.

Permit Term (for Which There is a Deviation): No deviations to report

Emission Units (unit IDs)

Deviation Start: ____/____/____ ____:____ End: ____/____/____ ____:____

Probable Cause of Deviation:

Corrective Actions or Preventative Measures Taken:

Permit Term (for Which There is a Deviation):

Emission Units (unit IDs)

Deviation Start: ____/____/____ ____:____ End: ____/____/____ ____:____

Probable Cause of Deviation:

Corrective Actions or Preventative Measures Taken:

Permit Term (for Which There is a Deviation):

Emission Units (unit IDs)

Deviation Start: ____/____/____ ____:____ End: ____/____/____ ____:____

Probable Cause of Deviation:

Corrective Actions or Preventative Measures Taken:

**Attachment 2. Summary of Limestone Handling System
Visible Emissions Observations**

Navajo Generating Station
Summary of Limestone Handling System Visible Emissions Observations
Permit No. NN-ROP-05-06, Condition II.E.2 and II.E.3

Period beginning: 01 / 01 / 2015
 Period ending: 06 / 30 / 2015

Date	Units Observed	Observer Initials	Visible Emissions?	Comments
01/05/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
01/12/15	DC9, DC10, DC11	JRA	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
01/19/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
01/26/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
02/02/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
02/09/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
02/16/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
02/23/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
03/02/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
03/09/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
03/16/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
03/23/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
03/31/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
04/07/15	DC9, DC10, DC11	LDS	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
04/13/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
04/20/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
04/28/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
05/04/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
05/11/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
05/19/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
05/26/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
06/01/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
06/08/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
06/15/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
06/22/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
06/30/15	DC9, DC10, DC11	WHB	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Attachment 3. Written Notification Report of Excess Emissions and Control System Outages

Attachment 4. Certification of Truth, Accuracy, and Completeness



APPLICATION FOR PART 71 FEDERAL OPERATING PROGRAM
 NAVAJO NATION ENVIRONMENTAL PROTECTION AGENCY
 NAVAJO NATION AIR QUALITY CONTROL PROGRAM



FORM CTAC – CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS BY RESPONSIBLE OFFICIAL

INSTRUCTIONS: One copy of this form must be completed, signed and sent with each submission of documents (i.e. application forms, updates to applications, reports, or any information required by a Part 71 Permit)

Responsible Official - Identify the responsible official and provide contact information.

Name: (Last) Talbot (First) Robert (Middle) K.

Title: Plant Manager

Street or Post Office: P.O. Box 850

City: Page State: AZ Zip 86040

Telephone (928) 645-6217 Ext. _____ Facsimile: (928) 645-7298

Certification of Truth, accuracy and Completeness – The Responsible Official must sign this Statement.

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in these documents are true, accurate and complete.

Name (signed): 

Name (Print or Typed) Robert K. Talbot

Date: 07-29-15

NAVAJO GENERATING STATION

EXCESS EMISSIONS REPORT

SECOND QUARTER, 2015

NAVAJO GENERATING STATION

P.O. Box 850
Page, AZ 86040
(928) 645-6217
Fax (928) 645-7298

ROBERT K. TALBOT
Manager

July 29, 2015

CERTIFIED MAIL

Director, Navajo Environmental Protection Agency
P.O. Box 339
Window Rock, AZ 86515

Director, Air Division
U.S. Environmental Protection Agency, Region IX
Mail Code: AIR-5
75 Hawthorne Street
San Francisco, CA 94105

RE: Navajo Generating Station FIP – 40 CFR §49.24, Title V Permit to Operate No. NN-ROP-05-06 and PSD Permit Number AZ 08-01 Quarterly Emission Report

Dear Director's,

Enclosed is the Second Quarter 2015 emissions report for Navajo Generating Station. The report contains the following information:

- Daily electrical energy generated in megawatt-hours (permit condition II.B.5.b).
- Sulfur dioxide and carbon dioxide information according to the procedures set forth at 40 CFR 60.7 and permit condition II.B.5.a;
- Identification of periods when opacity values exceeded 20 %, excluding condensed uncombined water droplets over any 6-minute period, and 40% averaged over 6 minutes, during absorber upset transition periods.
- Identification of periods when sulfur dioxide emissions exceeded 1.0 lb/mmBTU as a plantwide 3-hour average, and a CEMS data assessment according to the procedures set forth at 40 CFR §49.24(d)(1) of NGS FIP.

Page Two
July 29, 2015

- Nitrogen Oxide and Carbon Monoxide information according to PSD Permit Number AZ 08-01A, condition IX.G.5

With respect to the opacity data presented in the report, please note that 6-minute opacity readings are not individually listed during scrubber operations because the saturated stack conditions impedes the accuracy of the readings. The report identifies the block time periods for each unit that the scrubbers were operational and the stacks were saturated, in lieu of reporting the individual 6-minute wet stack readings.

Please contact Paul Ostapuk at (928) 645-6577 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Robert K. Talbot', with a long horizontal stroke extending to the right.

Robert K. Talbot
Plant Manager / Responsible Official

Enclosures

cc: Barbara Sprungl, SRP – Manager Air Quality & Environmental Services
Environmental File

CEM EXCESS EMISSION REPORT

Salt River Project
Navajo Generating Station
Page, Arizona

UNIT # 1, 2, 3

YEAR 2015

QUARTER SECOND

This report is in accordance with reporting requirements set forth in the NGS FIP – 40 CFR §49.24, Title V Permit to Operate, Permit No. NN-ROP 05-06, Section II.B.5 and PSD Permit Number AZ 08-01A, Condition IX.G.5.

Emission standards in this report are in accordance with the NGS FIP – 40 CFR §49.24 sections (d)(1), (d)(3), (d)(4), (e)(8), Title V Permit to Operate, NN-ROP-05-06 Section II.B.2 and PSD Permit Number AZ 08-01A Conditions IX.B.1 and IX.B.2

EXCESS EMISSIONS FOR QUARTER: None

NAVAJO GENERATING STATION
CEM SUMMARY SHEET
SECOND QUARTER OF 2015

	<u>UNIT 1</u>	<u>UNIT 2</u>	<u>UNIT 3</u>
# Hours of I.D. Fan Operation	2080.0 hrs	2184.0 hrs	1874.1 hrs
# Hours Boiler Operation	2056.8 hrs	2183.3 hrs	1808.5 hrs
Opacity Monitor Availability	99.90 %	99.93 %	99.91 %
SO2 #/mmBTU Availability	99.85 %	99.77 %	98.94 %
NOx #/mmBTU Availability	99.80 %	99.77 %	95.96 %
CO #/mmBTU Availability	99.85 %	99.77 %	98.94 %
Opacity Emission >20% (6-Min)	0.0 hrs	0.0 hrs	0.0 hrs
% Operating Time	0.00 %	0.00 %	0.00 %
Opacity Emission >40% (6-Min)	0.0 hrs	0.0 hrs	0.0 hrs
% Operating Time	0.00 %	0.00 %	0.00 %
SO2 #/mmBTU > 0.1 (365BOD)	0.0 days	0.0 days	0.0 days
% Operating Time	0.00 %	0.00 %	0.00 %
SO2 #/mmBTU >1.0 (3Hr)	0.0 days	0.0 days	0.0 days
% Operating Time	0.0 %	0.0 %	0.0 %
NOx #/mmBTU >0.24 (30D)	0.0 days	0.0 days	0.0 days
% Operating Time	0.0 %	0.0 %	0.0 %
CO #/mmBTU >0.23 (30D)	0.0 days	0.0 days	0.0 days
% Operating Time	0.0 %	0.0 %	0.0 %
CO #/mmBTU >0.15 (12M)	0.0 days	0.0 days	0.0 days
% Operating Time	0.0 %	0.0 %	0.0 %
Plant Coal, Ash and Road Sweeping Activities - Opacity Emission \geq 20% (hours)			0.0 hrs

NAVAJO GENERATING STATION

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Fax (928) 645-7298

ROBERT K. TALBOT
Manager

July 27, 2015

Director, Navajo Environmental Protection Agency
P.O. Box 339
Window Rock, AZ 86515

RE: Navajo Generating Station's 2015 Quarterly MATS PM Report

Dear Director,

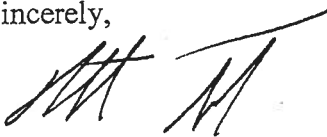
As per §63.10000(c)(1)(iv) NGS is submitting the Particulate Emissions Test Report MATS Compliance - Quarterly Testing for the Second Quarter of 2015. The test report is for the particulate testing completed for Units 1, 2 & 3 on May 28, 2015.

NGS will be repeating filterable PM performance testing on a quarterly basis, as per §63.10000(c)(1)(iv), which will further demonstrate maintenance of the emission rates and the control technology efficiencies.

The particulate testing resulted in a plant wide-average of 0.17 lb/MWh as compared to the MAT permit limit of 0.30 lb/MWh averaged on a plant-wide basis.

Should you have any questions please feel free to contact Paul Ostapuk at (928) 645-6577 or email him at paul.ostapuk@srpnet.com.

Sincerely,



Robert K. Talbot
Manager, Navajo Generating Station

Cc: Director, Air Division, U.S. Environmental Protection Agency, Region IX
Kara Montalvo, Director, Environmental Compliance and Permitting
Barbara Sprungl, Manager, Air Quality & Environmental Systems

CERTIFIED MAIL



**SALT RIVER PROJECT
NAVAJO GENERATING STATION
UNITS 1, 2 & 3**

**PARTICULATE EMISSIONS TEST REPORT
MATS COMPLIANCE – QUARTERLY TESTING**

**CATALYST AIR MANAGEMENT, INC.
REPORT NUMBER 264-039**

JUNE 29, 2015
Test Dates: May 18-21, 2015

Prepared for
Mr. Walter Begay
Salt River Project
Navajo Generating Station
State Highway 98
Page, AZ 86040

TABLE 2
Isokinetic Sampling Summary
EPA Method 5B - Particulate
NGS 1

Client: **Salt River Project**

Plant: **Navajo 1**

Location: **Stack**

Run Number:	1	2	3
Date:	5/18/2015	5/18/2015	5/18/2015
Run Time: Start	10:28	14:20	15:40
End	11:36	15:28	16:46
Unit Load (MW):	814	815	815
DN - Nozzle Diameter:	0.235	0.235	0.235
Pbar - Barometric Pressure:	25	25.00	25.05
TT - Sampling Time:	60	60	60
VM - Meter Volume:	45.354	43.934	45.281
TM - Avg. Meter Temp (F):	66	69	70
PM - Avg. Delta H (in. of H2O):	1.500	1.383	1.383
Y - Meter Calibration Factor:	0.99	0.99	0.99
VMSTD - Std. Gas Volume (SCF):	37.829	36.401	37.550
Vlc - Volume Water Collected:	127	125	123
%M - Percent Moisture:	13.7	13.9	13.4
Bws - Mole Fraction, Dry:	0.137	0.139	0.134
%CO2 - Carbon Dioxide, Dry:	12.6	13.2	13.2
%O2 - Oxygen, Dry:	6.9	6.3	6.2
%EA - Excess Air	48.1	42.1	41.1
MD - Dry Molecular Weight:	30.29	30.36	30.36
MS - Wet Molecular Weight:	28.61	28.64	28.71
A - Stack Area, SQ.FT:	948.40	948.40	948.40
PS - Static Press. (in. of Hg):	25.11	25.08	25.14
TS - Stack Temp. (F):	117	117	118
CP - Pitot Coefficient:	0.84	0.84	0.84
VS - Stack Gas Velocity (AFPS):	50.9	48.9	48.8
QS - Stack Gas Volume (DSCFM):	1,920,277	1,837,050	1,846,457
QA - Stack Gas Volume (ACFM):	2,894,563	2,781,813	2,777,771
%I - Isokinetic Ratio:	103.4	104.0	106.8
Particulate Emissions			
mg - Catch weight:	15.9	30.4	26.5
Gr/DSCF - Emission Concentration:	0.006	0.013	0.011
lb/mmBtu - Emission Rate:	0.014	0.026	0.022
Average Gr/DSCF		0.010	
Average lb/mmBtu		0.020	

TABLE 3
Isokinetic Sampling Summary
EPA Method 5B - Particulate
NGS 2

Client: **Salt River Project**

Plant: **Navajo 2**

Location: **Stack**

Run Number:	1	2	3
Date:	5/20/2015	5/20/2015	5/20/2015
Run Time: Start	11:11	12:35	14:06
End	12:17	13:41	15:13
Unit Load (MW):	806	806	806
DN - Nozzle Diameter:	0.235	0.235	0.235
Pbar - Barometric Pressure:	25.1	25.10	25.10
TT - Sampling Time:	60	60	60
VM - Meter Volume:	47.859	47.767	47.763
TM - Avg. Meter Temp (F):	68	72	74
PM - Avg. Delta H (in. of H ₂ O):	1.642	1.625	1.592
Y - Meter Calibration Factor:	0.99	0.99	0.99
VMSTD - Std. Gas Volume (SCF):	39.939	39.541	39.405
Vlc - Volume Water Collected:	125	139	136
%M - Percent Moisture:	12.8	14.2	14.0
Bws - Mole Fraction, Dry:	0.128	0.142	0.140
%CO ₂ - Carbon Dioxide, Dry:	12.7	12.9	12.9
%O ₂ - Oxygen, Dry:	7.0	6.9	6.7
%EA - Excess Air	49.3	48.3	46.1
MD - Dry Molecular Weight:	30.31	30.34	30.33
MS - Wet Molecular Weight:	28.73	28.59	28.61
A - Stack Area, SQ.FT:	948.40	948.40	948.40
PS - Static Press. (in. of Hg):	25.23	25.23	25.23
TS - Stack Temp. (F):	118	117	117
CP - Pitot Coefficient:	0.84	0.84	0.84
VS - Stack Gas Velocity (AFPS):	52.7	52.8	51.9
QS - Stack Gas Volume (DSCFM):	2,015,753	1,988,735	1,960,790
QA - Stack Gas Volume (ACFM):	3,001,442	3,002,865	2,955,154
%I - Isokinetic Ratio:	104.0	104.4	105.5
Particulate Emissions			
mg - Catch weight:	17.0	26.1	20.0
Gr/DSCF - Emission Concentration:	0.007	0.010	0.008
lb/mmBtu - Emission Rate:	0.014	0.021	0.016
Average Gr/DSCF		0.008	
Average lb/mmBtu		0.017	

TABLE 4
Isokinetic Sampling Summary
EPA Method 5B - Particulate
NGS 3

Client: **Salt River Project**
Plant: **Navajo 3**
Location: **Stack**

Run Number:	1	2	3
Date:	5/21/2015	5/21/2015	5/21/2015
Run Time: Start	10:20	15:34	5:10
End	12:26	16:40	6:15
Unit Load (MW):	809	810	810
DN - Nozzle Diameter:	0.235	0.235	0.235
Pbar - Barometric Pressure:	25.03	25.03	25.03
TT - Sampling Time:	60	60	60
VM - Meter Volume:	45.95	46.604	45.833
TM - Avg. Meter Temp (F):	72	71	73
PM - Avg. Delta H (in. of H2O):	1.525	1.533	1.517
Y - Meter Calibration Factor:	0.99	0.99	0.99
VMSTD - Std. Gas Volume (SCF):	37.936	38.516	37.785
Vlc - Volume Water Collected:	130	133	132
%M - Percent Moisture:	13.9	14.0	14.1
Bws - Mole Fraction, Dry:	0.139	0.140	0.141
%CO2 - Carbon Dioxide, Dry:	13.4	13.2	13.3
%O2 - Oxygen, Dry:	5.9	5.9	6.0
%EA - Excess Air	38.3	38.2	39.2
MD - Dry Molecular Weight:	30.38	30.35	30.37
MS - Wet Molecular Weight:	28.66	28.62	28.62
A - Stack Area, SQ.FT:	948.40	948.40	948.40
PS - Static Press. (in. of Hg):	25.15	25.15	25.15
TS - Stack Temp. (F):	117	116	116
CP - Pitot Coefficient:	0.84	0.84	0.84
VS - Stack Gas Velocity (AFPS):	51.1	51.3	51.1
QS - Stack Gas Volume (DSCFM):	1,927,407	1,933,312	1,923,000
QA - Stack Gas Volume (ACFM):	2,907,950	2,919,123	2,906,614
%I - Isokinetic Ratio:	103.3	104.6	103.2
Particulate Emissions			
mg - Catch weight:	12.6	15.3	14.2
Gr/DSCF - Emission Concentration:	0.005	0.006	0.006
lb/mmBtu - Emission Rate:	0.010	0.012	0.011

Average Gr/DSCF 0.006
Average lb/mmBtu **0.011**

4.0 Description of Combustion Units

Navajo Generating Station (NGS) is located on the Navajo Reservation, 6 miles east of Page, Arizona, off U.S. Highway 98. NGS has three 750 MW (net) coal fired units with hot side electrostatic precipitators and wet limestone scrubbers.

5.0 Description of CEMS

The Units 1, 2 and 3 CEMS are dilution extraction systems that measures SO₂, NO_x, CO₂, CO, and flow at the sampling location. The CEMS analyzers includes a TEI Model 43i SO₂ analyzer, TEI Model 42i NO_x analyzer, TEI Model 410i CO₂ analyzer, TEI Model 48i CO analyzer and a Teledyne 1500 Ultraflow flow monitor.

The recording and reporting requirements are performed by an ESC StackVision computerized data acquisition and handling system. The data acquisition and handling system utilizes an Fc factor (scf/mmBtu) of 1800 to calculate NO_x emissions in lbs/mmBtu. The data acquisition and handling system reports the volumetric flow data in standard cubic feet per hour (SCFH).

Unit 1 CEMS

- (1) TEI SO₂ – 43i - Serial No. - 1212352692
- (1) TEI NO_x – 42i - Serial No. - 1212352695
- (1) TEI CO₂ – 410i - Serial No. - 1212352699
- (1) TEI CO – 48i - Serial No. - 1103947059
- (1) Teledyne Ultraflow150 - Serial No. – 1501118

Unit 2 CEMS

- (1) TEI SO₂ – 43i - Serial No. - 1212352693
- (1) TEI NO_x – 42i - Serial No. - 1212352696
- (1) TEI CO₂ – 410i - Serial No. - 1212352700
- (1) TEI CO – 48i - Serial No. - 100394547
- (1) Teledyne Ultraflow150 - Serial No. – 1501119

Unit 3 CEMS

- (1) TEI SO₂ – 43i - Serial No. - 1212352694
- (1) TEI NO_x – 42i - Serial No. - 1212352697
- (1) TEI CO₂ – 410i - Serial No. - 1212352701
- (1) TEI CO – 48i - Serial No. - CM08490074
- (1) Teledyne Ultraflow150 - Serial No. – 1501120
- (1) PCME WS-181 PM Monitor – Serial No. 40536

6.0 Sampling Program Procedures

The following test methods were utilized during the test program:

EPA Method 1	Sample and Velocity Traverse for Stationary Sources
EPA Method 2	Determination of Stack Gas Velocity and Volumetric Flow Rate
EPA Method 3A	Gas Analysis for CO ₂ , O ₂ , Excess Air and Dry Molecular Weight (Instrumental Analyzer Method)
EPA Method 4	Determination of Moisture Content in Stack Gas
EPA Method 5B	Determination of Non-Sulfuric Acid Particulate Emissions from Stationary Sources

Three (3) 60-minute test runs were performed on Units 1, 2, and 3.

6.1 Particulate – EPA Method 5B

The flue gas sample was extracted isokinetically from the gas stream and the particulate emissions were determined by gravimetrically determining the amount of particulate matter collected in the nozzle, probe, filter holder and filter. The probe and filter were both maintained at 320° ± 25° F. The sampling train consists of the following equipment connected in series:

- Glass lined probe and stainless steel nozzle
- Glass fiber filter within a heated filter holder with Teflon support
- A modified Greenburg-Smith impinger containing 100 ml of distilled water
- A Greenburg-Smith impinger containing 100 ml of distilled water
- A modified Greenburg-Smith impinger, empty
- A modified Greenburg-Smith impinger containing approximately 250g of silica gel

The sample volume was measured by passing it through a calibrated dry gas meter. An S-type pitot tube was attached to the probe to measure stack gas velocity and to maintain isokinetic sampling. A K-type thermocouple was also attached to the probe to measure the gas temperature.

After the run, the probe, nozzle and connecting glassware ahead of the filter were brushed and rinsed with acetone. The washings were retained in labeled, glass sample containers for analysis. The impinger contents were measured for increase in volume. The silica gel was returned to the original tared container and weighed to determine moisture gain.

Particulate matter was determined by using the analytical procedures outlined in EPA Method 5B.

- a. Dry each filter at 320° F, desiccate to a constant weight and record the results to 0.1 mg.

- b. Measure the acetone rinse. Evaporate the acetone rinse in a tared beaker, desiccate to a constant weight and record results to 0.1 mg.

PM emission results are presented in units of grains per dry standard cubic feet (gr/dscf) and pounds per million British Thermal Units (lb/MMBtu, the units of the filterable PM emissions standard). The PM results in units of lb/MMBtu were calculated in accordance with EPA Method 19.

6.2 O₂ and CO₂ – EPA Method 3A

A sample was continuously extracted and introduced into a Servomex 1400 O₂/CO₂ analyzer for determination of gas concentrations.

The sample was extracted through a heated stainless steel probe, heated sample line and sample conditioner to dry the sample before it enters the analyzers. A sample flow control system was used to control the flow into the analyzers. The analyzers were calibrated prior to starting the testing with EPA Protocol 1, calibration gases. A system bias check was performed before each run by introducing the zero and upscale gas at the back end of the sample probe. The system bias check was repeated at the end of each test run to determine the analyzer zero and calibration drift.

The O₂/CO₂ analyzer spans were 0-22% and 0-17%, respectively. The O₂ calibration gases utilized were 11.83% and 21.78%. The CO₂ calibration gases were 10.05% and 16.70%.

The sampling was conducted in a vertical section of each stack, which are 34.75 feet in diameter. There are four (4) test ports orientated 90 degrees apart. The test ports are located > 8.0 diameters downstream and > 2.0 diameters upstream from the nearest flow disturbance. The sampling was performed at three (3) traverse points for each port, 12 total points.

All sampling procedures, quality assurance, analysis and calculations utilized for the program were performed in accordance with the Code of Federal Regulations, Title 40, Part 60, Appendix A.

7.0 Operating Conditions

Operating conditions were monitored throughout the sampling program by SRP personnel.

The testing was performed May 18-21, 2015, as follows:

UNIT	MW	DATE	# of RUNS
1	815	5/18/15	3
2	806	5/20/15	3
3	810	5/21/15	3

8.0 Quality Assurance Procedures

The quality assurance procedures utilized during the testing activities followed the guidelines set forth by the previously mentioned methods and the EPA Quality Assurance Handbook for Source Sampling. The specific procedures for this test program are listed below.

8.1 Isokinetic Equipment

The sample nozzles were visually inspected and measured across three different diameters to determine the appropriate nozzle diameter.

S-type pitot tubes were visually inspected and measured to meet the design specifications of EPA Method 2 for a 0.84 pitot coefficient. Both legs of the pitot tube were leak checked before and after each sample run.

The stack thermocouples were calibrated prior to the testing and a post-test check was performed after the testing project.

The manometer was leveled and zeroed before each sample run.

The dry gas meter is fully calibrated annually using an EPA intermediate standard. Post -test dry gas meter checks were completed to verify the accuracy of the meter Yi.

Pre-test and post-test leak checks were completed and were less than 0.02 cfm at the highest sampling vacuum.

8.2 Instrumental Methods

Analyzer calibrations, system bias check and drift checks were completed before and after each sample run utilizing EPA Protocol calibration gases.

The analyzer interference responses were determined in accordance with Section 8.2.7 of Method 7E.

8.3 Data and Calculations

A manual calculation check is performed on a single run for each parameter.

9.0 Discussion

9.1 Chain of Custody

All the field samples were collected, sealed and transported to the Catalyst facility in Knoxville, TN under the supervision of Rick Derrera. The samples were labeled to identify the following:

- Client and source
- Date
- Type of Sample
- Run number

Sample location
Sample fraction

9.2 Sampling Conditions and Concerns

There were no delays or interruptions during the testing.

NAVAJO GENERATING STATION

P.O. Box 850
Page, AZ 86040
(928) 645-6217
Fax (928) 645-7298

ROBERT K. TALBOT
Manager

July 27, 2015

Director, Navajo Environmental Protection Agency
P.O. Box 339
Window Rock, AZ 86515

RE: Navajo Generating Station's 2015 Particulate Emissions Test Report

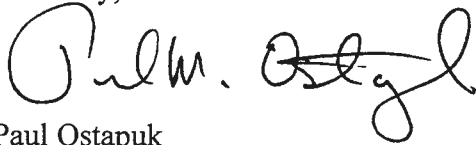
Dear Director,

As required by the Navajo Generating Station (NGS) Federal Implementation Plan, Condition (f) (1), NGS is submitting the results of its annual mass emissions tests for particulate matter. NGS completed its annual mass emissions tests for Units 1, 2 and 3 on May 28, 2015.

The particulate testing resulted in a plant wide-average of 0.017 lb/MMBtu as compared to the permit limit of 0.060 lb/MMBtu averaged on a plant-wide basis.

Should you have any questions please feel free to contact me at (928) 645-6577 or email me at paul.ostapuk@srpnet.com.

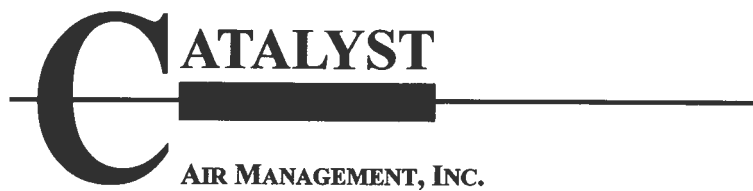
Sincerely,



Paul Ostapuk
Manager, Environmental, Labs, Safety and Training

Cc: Director, Air Division, U.S. Environmental Protection Agency, Region IX
Robert Talbot, Manager, NGS
Kara Montalvo, Director, Environmental Compliance and Permitting
Barbara Sprungl, Manager, Air Quality & Environmental Systems

CERTIFIED MAIL



**SALT RIVER PROJECT
NAVAJO GENERATING STATION
UNITS 1, 2 & 3**

PARTICULATE EMISSIONS TEST REPORT

**CATALYST AIR MANAGEMENT, INC.
REPORT NUMBER 264-033**

JUNE 29, 2015
Test Dates: May 18-21, 2015

Prepared for
Mr. Walter Begay
Salt River Project
Navajo Generating Station
State Highway 98
Page, AZ 86040

TABLE 2
Isokinetic Sampling Summary
EPA Method 5 - Particulate
NGS 1

Client: **Salt River Project**

Plant: **Navajo 1**

Location: **Stack**

Run Number:	1	2	3
Date:	5/18/2015	5/18/2015	5/18/2015
Run Time: Start	10:28	14:20	15:40
End	11:36	15:28	16:46
Unit Load (MW):	814	815	815
DN - Nozzle Diameter:	0.235	0.235	0.235
Pbar - Barometric Pressure:	25	25.00	25.05
TT - Sampling Time:	60	60	60
VM - Meter Volume:	45.354	43.934	45.281
TM - Avg. Meter Temp (F):	66	69	70
PM - Avg. Delta H (in. of H2O):	1.500	1.383	1.383
Y - Meter Calibration Factor:	0.99	0.99	0.99
VMSTD - Std. Gas Volume (SCF):	37.829	36.401	37.550
Vlc - Volume Water Collected:	127	125	123
%M - Percent Moisture:	13.7	13.9	13.4
Bws - Mole Fraction, Dry:	0.137	0.139	0.134
%CO2 - Carbon Dioxide, Dry:	12.6	13.2	13.2
%O2 - Oxygen, Dry:	6.9	6.3	6.2
%EA - Excess Air	48.1	42.1	41.1
MD - Dry Molecular Weight:	30.29	30.36	30.36
MS - Wet Molecular Weight:	28.61	28.64	28.71
A - Stack Area, SQ.FT:	948.40	948.40	948.40
PS - Static Press. (in. of Hg):	25.11	25.08	25.14
TS - Stack Temp. (F):	117	117	118
CP - Pitot Coefficient:	0.84	0.84	0.84
VS - Stack Gas Velocity (AFPS):	50.9	48.9	48.8
QS - Stack Gas Volume (DSCFM):	1,920,277	1,837,050	1,846,457
QA - Stack Gas Volume (ACFM):	2,894,563	2,781,813	2,777,771
%I - Isokinetic Ratio:	103.4	104.0	106.8
<u>Particulate Emissions</u>			
mg - Catch weight:	17.0	30.5	28.4
Gr/DSCF - Emission Concentration:	0.007	0.013	0.012
lb/hr - Emission Rate:	114.114	203.542	184.667
lb/MWH - Emission Rate:	0.140	0.250	0.227

Average Gr/DSCF	0.011
Average lb/hr	167.441
Average lb/MWH	0.206

TABLE 3
Isokinetic Sampling Summary
EPA Method 5 - Particulate
NGS 2

Client: **Salt River Project**

Plant: **Navajo 2**

Location: **Stack**

Run Number:	1	2	3
Date:	5/20/2015	5/20/2015	5/20/2015
Run Time: Start	11:11	12:35	14:06
End	12:17	13:41	15:13
Unit Load (MW):	806	806	806
DN - Nozzle Diameter:	0.235	0.235	0.235
Pbar - Barometric Pressure:	25.1	25.10	25.10
TT - Sampling Time:	60	60	60
VM - Meter Volume:	47.859	47.767	47.763
TM - Avg. Meter Temp (F):	68	72	74
PM - Avg. Delta H (in. of H2O):	1.642	1.625	1.592
Y - Meter Calibration Factor:	0.99	0.99	0.99
VMSTD - Std. Gas Volume (SCF):	39.939	39.541	39.405
Vlc - Volume Water Collected:	125	139	136
%M - Percent Moisture:	12.8	14.2	14.0
Bws - Mole Fraction, Dry:	0.128	0.142	0.140
%CO2 - Carbon Dioxide, Dry:	12.7	12.9	12.9
%O2 - Oxygen, Dry:	7.0	6.9	6.7
%EA - Excess Air	49.3	48.3	46.1
MD - Dry Molecular Weight:	30.31	30.34	30.33
MS - Wet Molecular Weight:	28.73	28.59	28.61
A - Stack Area, SQ.FT:	948.40	948.40	948.40
PS - Static Press. (in. of Hg):	25.23	25.23	25.23
TS - Stack Temp. (F):	118	117	117
CP - Pitot Coefficient:	0.84	0.84	0.84
VS - Stack Gas Velocity (AFPS):	52.7	52.8	51.9
QS - Stack Gas Volume (DSCFM):	2,015,753	1,988,735	1,960,790
QA - Stack Gas Volume (ACFM):	3,001,442	3,002,865	2,955,154
%I - Isokinetic Ratio:	104.0	104.4	105.5
Particulate Emissions			
mg - Catch weight:	18.1	27.8	21.6
Gr/DSCF - Emission Concentration:	0.007	0.011	0.008
lb/hr - Emission Rate:	120.801	184.891	142.064
lb/MWH - Emission Rate:	0.148404	0.227139	0.1745

Average Gr/DSCF	0.009
Average lb/hr	149.252
Average lb/MWH	0.183

TABLE 4
Isokinetic Sampling Summary
EPA Method 5 - Particulate
NGS 3

Client: **Salt River Project**

Plant: **Navajo 3**

Location: **Stack**

Run Number:	1	2	3
Date:	5/21/2015	5/21/2015	5/21/2015
Run Time: Start	10:20	15:34	5:10
End	12:26	16:40	6:15
Unit Load (MW):	809	810	810
DN - Nozzle Diameter:	0.235	0.235	0.235
Pbar - Barometric Pressure:	25.03	25.03	25.03
TT - Sampling Time:	60	60	60
VM - Meter Volume:	45.95	46.604	45.833
TM - Avg. Meter Temp (F):	72	71	73
PM - Avg. Delta H (in. of H2O):	1.525	1.533	1.517
Y - Meter Calibration Factor:	0.99	0.99	0.99
VMSTD - Std. Gas Volume (SCF):	37.936	38.516	37.785
Vlc - Volume Water Collected:	130	133	132
%M - Percent Moisture:	13.9	14.0	14.1
Bws - Mole Fraction, Dry:	0.139	0.140	0.141
%CO2 - Carbon Dioxide, Dry:	13.4	13.2	13.3
%O2 - Oxygen, Dry:	5.9	5.9	6.0
%EA - Excess Air	38.3	38.2	39.2
MD - Dry Molecular Weight:	30.38	30.35	30.37
MS - Wet Molecular Weight:	28.66	28.62	28.62
A - Stack Area, SQ.FT:	948.40	948.40	948.40
PS - Static Press. (in. of Hg):	25.15	25.15	25.15
TS - Stack Temp. (F):	117	116	116
CP - Pitot Coefficient:	0.84	0.84	0.84
VS - Stack Gas Velocity (AFPS):	51.1	51.3	51.1
QS - Stack Gas Volume (DSCFM):	1,927,407	1,933,312	1,923,000
QA - Stack Gas Volume (ACFM):	2,907,950	2,919,123	2,906,614
%I - Isokinetic Ratio:	103.3	104.6	103.2

Particulate Emissions

mg - Catch weight:	14.1	16.0	15.3
Gr/DSCF - Emission Concentration:	0.006	0.006	0.006
lb/hr - Emission Rate:	94.731	106.135	102.968
lb/MWH - Emission Rate:	0.12	0.13	0.13

Average Gr/DSCF	0.006
Average lb/hr	101.278
Average lb/MWH	0.124

4.0 Description of Combustion Units

Navajo Generating Station (NGS) is located on the Navajo Reservation, 6 miles east of Page, Arizona, off U.S. Highway 98. NGS has three 750 MW (net) coal fired units with hot side electrostatic precipitators and wet limestone scrubbers.

5.0 Description of CEMS

The Units 1, 2 and 3 CEMS are dilution extraction systems that measures SO₂, NO_x, CO₂, CO and flow at the sampling location. The CEMS analyzers includes a TEI Model 43i SO₂ analyzer, TEI Model 42i NO_x analyzer, TEI Model 410i CO₂ analyzer, TEI Model 48i CO analyzer and a Teledyne 1500 Ultraflow flow monitor.

The recording and reporting requirements are performed by an ESC StackVision computerized data acquisition and handling system. The data acquisition and handling system utilizes an Fc factor (scf/mmBtu) of 1800 to calculate NO_x emissions in lbs/mmBtu. The data acquisition and handling system reports the volumetric flow data in standard cubic feet per hour (SCFH).

Unit 1 CEMS

- (1) TEI SO₂ – 43i - Serial No. - 1212352692
- (1) TEI NO_x – 42i - Serial No. - 1212352695
- (1) TEI CO₂ – 410i - Serial No. - 1212352699
- (1) TEI CO – 48i - Serial No. - 1103947059
- (1) Teledyne Ultraflow150 - Serial No. – 1501118

Unit 2 CEMS

- (1) TEI SO₂ – 43i - Serial No. - 1212352693
- (1) TEI NO_x – 42i - Serial No. - 1212352696
- (1) TEI CO₂ – 410i - Serial No. - 1212352700
- (1) TEI CO – 48i - Serial No. - 100394547
- (1) Teledyne Ultraflow150 - Serial No. – 1501119

Unit 3 CEMS

- (1) TEI SO₂ – 43i - Serial No. - 1212352694
- (1) TEI NO_x – 42i - Serial No. - 1212352697
- (1) TEI CO₂ – 410i - Serial No. - 1212352701
- (1) TEI CO – 48i - Serial No. - CM08490074
- (1) Teledyne Ultraflow150 - Serial No. – 1501120

6.0 Sampling Program Procedures

The following test methods were utilized during the test program:

EPA Method 1	Sample and Velocity Traverse for Stationary Sources
EPA Method 2	Determination of Stack Gas Velocity and Volumetric Flow Rate
EPA Method 3A	Gas Analysis for CO ₂ , O ₂ , Excess Air and Dry Molecular Weight (Instrumental Analyzer Method)
EPA Method 4	Determination of Moisture Content in Stack Gas
EPA Method 5*	Determination of Particulate Matter Emissions from Stationary Sources (* MATS modified)

Three (3) 60-minute test runs were performed on Units 1, 2, and 3.

6.1 Particulate – EPA Method 5 (MATS modified)

The flue gas sample was extracted isokinetically from the gas stream and the particulate emissions were determined by gravimetrically determining the amount of particulate matter collected in the nozzle, probe, filter holder and filter. The probe and filter were both maintained at 320° ± 25° F. The sampling train consists of the following equipment connected in series:

- Glass lined probe and stainless steel nozzle
- Glass fiber filter within a heated filter holder with Teflon support
- A modified Greenburg-Smith impinger containing 100 ml of distilled water
- A Greenburg-Smith impinger containing 100 ml of distilled water
- A modified Greenburg-Smith impinger, empty
- A modified Greenburg-Smith impinger containing approximately 250g of silica gel

The sample volume was measured by passing it through a calibrated dry gas meter. An S-type pitot tube was attached to the probe to measure stack gas velocity and to maintain isokinetic sampling. A K-type thermocouple was also attached to the probe to measure the gas temperature.

After the run, the probe, nozzle and connecting glassware ahead of the filter were brushed and rinsed with acetone. The washings were retained in labeled, glass sample containers for analysis. The impinger contents were measured for increase in volume. The silica gel was returned to the original tared container and weighed to determine moisture gain.

Particulate matter was determined by using the analytical procedures outlined in EPA Method 5.

- a. Dry each filter at 220° F for 2 hours, desiccate to a constant weight and record the results to 0.1 mg.

- b. Measure the acetone rinse. Evaporate the acetone rinse in a tared beaker, desiccate to a constant weight and record results to 0.1 mg.

PM emission results are presented in units of grains per dry standard cubic feet (gr/dscf) and pounds per megaWatt hour (lb/MWH, the units of the filterable PM emissions standard).

6.2 O₂ and CO₂ – EPA Method 3A

A sample was continuously extracted and introduced into a Servomex 1400 O₂/CO₂ analyzer for determination of gas concentrations.

The sample was extracted through a heated stainless steel probe, heated sample line and sample conditioner to dry the sample before it enters the analyzers. A sample flow control system was used to control the flow into the analyzers. The analyzers were calibrated prior to starting the testing with EPA Protocol 1, calibration gases. A system bias check was performed before each run by introducing the zero and upscale gas at the back end of the sample probe. The system bias check was repeated at the end of each test run to determine the analyzer zero and calibration drift.

The O₂/CO₂ analyzer spans were 0-22% and 0-17%, respectively. The O₂ calibration gases utilized were 11.83% and 21.78%. The CO₂ calibration gases were 10.05% and 16.70%.

The sampling was conducted in a vertical section of the stack, which is 34.75 feet in diameter. There are four (4) test ports orientated 90 degrees apart. The test ports are located > 8.0 diameters downstream and > 2.0 diameters upstream from the nearest flow disturbance. The sampling was performed at three (3) traverse points for each port, 12 total points.

All sampling procedures, quality assurance, analysis and calculations utilized for the program were performed in accordance with the Code of Federal Regulations, Title 40, Part 60, Appendix A.

7.0 Operating Conditions

Operating conditions were monitored throughout the duration of the sampling program by SRP personnel. The testing was performed May 18-21, 2015, as follows:

UNIT	MW	DATE	# of RUNS
1	815	5/18/15	3
2	806	5/20/15	3
3	810	5/21/15	3

8.0 Quality Assurance Procedures

The quality assurance procedures utilized during the testing activities followed guidelines set forth by the previously mentioned methods and the EPA Quality Assurance Handbook for Source Sampling. The specific procedures for this test program are listed below.

8.1 Isokinetic Equipment

The sample nozzles were visually inspected and measured across three different diameters to determine the appropriate nozzle diameter.

S-type pitot tubes were visually inspected and measured to meet the design specifications of EPA Method 2 for a 0.84 pitot coefficient. Both legs of the pitot tube were leak checked before and after each sample run.

The stack thermocouples were calibrated prior to the testing and a post-test check was performed after the testing project.

The manometer was leveled and zeroed before each sample run.

The dry gas meter is fully calibrated annually using an EPA intermediate standard. Post -test dry gas meter checks were completed to verify the accuracy of the meter Yi.

Pre-test and post-test leak checks were completed and were less than 0.02 cfm at the highest sampling vacuum.

8.2 Instrumental Methods

Analyzer calibrations, system bias check and drift checks were completed before and after each sample run utilizing EPA Protocol calibration gases.

The analyzer interference responses were determined in accordance with Section 8.2.7 of Method 7E.

8.3 Data and Calculations

A manual calculation check is performed on a single run for each parameter.

9.0 Discussion

9.1 Chain of Custody

All of the field samples were collected, sealed and transported to the Catalyst facility in Knoxville, TN under the supervision of Rick Derrera. The samples were labeled to identify the following:

- Client and source
- Date
- Type of Sample
- Run number
- Sample location
- Sample fraction

9.2 Sampling Conditions and Concerns

There were no delays or interruptions during the testing.